

Professional Certifications Implemented into the Cal Poly SLO CM Curriculum

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The California Polytechnic State University, San Luis Obispo has a well-recognized and prestigious program in the Construction Management Department. In a few of the labs, professional certifications or introductory courses to obtain the certification are offered. Professional certifications are viewed highly in the construction industry and encourage students to gain more skills and distinguish themselves in various sectors. Demand has risen for specialized knowledge in professional credentials. Both faculty and industry members view that certain professional certifications should be essential to work in construction. The possibility of implementing these certifications in Cal Poly's Construction Management program could set the students apart compared to their competition and benefit them when entering the work force. This would also assist in the "learn by doing" motto, as students would be leaving with professional certifications that would apply in their future workplace. With these additional certifications, it would allow students to further their knowledge about the specific area of construction they would like to pursue post-graduation. This paper will explore the various certifications students could acquire and compare the components of each certification. By conducting research, surveys, and interviews, this paper will outline a proposal for professional certifications to be implemented in the Cal Poly SLO's Construction Management curriculum.

Key Words: Professional Certifications, Construction Management Curriculum, Credentials, Industry, Cal Poly SLO

Introduction

The Construction Management Department at California Polytechnic State University, San Luis Obispo is known to have an outstanding program offering construction management courses, including hands on labs, architectural engineering courses, and business courses that ultimately shape its well-rounded students. Even though, these students are well-prepared to join the work force upon graduation, there is always room for improvement among any program. In order to separate Cal Poly Construction Management students from other recent graduates, one option is to offer professional certifications in the curriculum. Students strive to absorb more information before graduation, in order, to succeed for future work and these certifications could allow students to hone in on what sector of the industry they are interested in. By entering the work force with certifications, it could help students qualify them for more advanced work and gain specialized knowledge. While professional certifications are not necessary in the construction industry, they distinguish peers to be competent, knowledgeable, and driven.

This paper is purposed to research what professional certifications are feasible for Cal Poly Construction Management students to acquire. Through research, differences are identified among the certifications: how they could benefit the students, how to fulfill the certification via courses and tests, if they need prior education or work experience, costs of obtaining one, and specifics towards the renewal process. Students will be able to make educated decisions upon which professional certifications they would like to see implemented in the Cal Poly Construction Management curriculum or be offered as an option at a subsidized cost. Either way these certifications will assist the students to be better prepared to become future builders of the construction industry. Depending on what sector a student is interested in: residential, commercial, civil, specialties, or industrial, there are particular organizations that offer professional certifications that tailor to this work. Since the Construction Management curriculum does not offer students to declare a concentration in construction, allowing students to have this additional opportunity would help promote working in their chosen environment.

Construction Management Professional Certifications

The information collected observes the various professional certifications that students the Cal Poly Construction Management Department could acquire. The department does offer a couple of courses that could lead to a certification. Prior to investigating various certifications, all professors of the construction management department and clubs were asked if they had implemented any certification. In the jobsite class they require students to either complete the OSHA 10-hour or 30-hour certification, which focuses on the safety precautions that must be taken on any jobsite. In one of the tech elective's Sustainability and Environment offers two courses taught by Professor Scott Kelting: NAHB High Performance Building for Building Professionals and Basics of Building. Both these courses can later be used to acquire the NAHB Certified Green Professional (CGP). Also the construction management catalog 2015-2017 requires students to complete the AIC Associate Contractor (AC) Certificate, which distinguishes students graduating to be able to manage the process of construction. There is focus that more certifications could be implemented through the various tech electives that the construction management department offers to students.

Through extensive research here is a compilation of all the professional certifications that have yet to be offered in the Cal Poly Construction Management program. The costs listed for certifications should be acknowledged, but could significantly change due to them being subsidized by donors that support the program. Also certifications that require additional work experience are flexible with accepting attendance to school classes instead. Few organizations require a Bachelor's Degree in order to obtain the certificate. Although they do allow students to complete all courses and the exam, but after graduation then the student may send the application to receive the certificate.

LEED, Green Associate (GA): Becoming a LEED professional will assist students on tackling future LEED rated projects. It shows dedication to sustainability, green building, and reducing building operational costs. The GA certification is required to advance to the next level of LEED certification: LEED AP+ Specialty, which specifies into different aspects of the construction industry.

- Cost: \$100 for Students
- Prior Education: None, study materials can be obtained through USGBC.
- Prior Work Experience: None
- Renewal of Certification: Valid for 2 years, \$85 Renewal Cost
- Exam: 100 Multiple Choice Questions, 2 hours max. to complete, Passing minimum 85%

NAHB, Certified Green Professional (CGP): The CGP designation recognizes builders, remodelers and other industry professionals who incorporate green and sustainable building principles into homes without driving up construction costs.

- Cost: \$110 Non-member, \$75 Member
- Prior Education: Two NAHB courses, both currently taught in one tech elective offered at Cal Poly
- Prior Work Experience: 2 years
- Renewal of Certification: Valid for 1 year, \$83 Non-member and \$55 Member Annual Renewal Cost
- Exam: No Major Test besides those taken in the 2 courses

DBIA, Associate Design-Build Professional (Assoc. DBIA): The Assoc. DBIA provides a standard to measure one's knowledge of the design build process such as business development and procurement. The certification focuses on new professionals able to administer the design build process in construction projects.

- Cost: \$400 Exam, \$95 Application Fee, \$1000 for 4 courses each \$250 (Student Pricing)
- Prior Education: Bachelor's Degree in Construction Management
- Prior Work Experience: None
- Renewal of Certification: Valid for 2 years, \$150 Non-member and \$50 Member Renewal Cost
- Exam: 100 Multiple Choice Questions, 2 hours max. to complete

CMAA, Construction Manager in Training (CMIT): The CMIT designation demonstrates competence in the practice of construction management early in an individual's career. The CMIT program will help develop students from the education platform into construction managers and leaders.

- Cost: \$125 Non-member, \$75 Member
- Prior Education: Bachelor's Degree in Construction Management or 75 credit hours put towards that degree
- Prior Work Experience: None
- Renewal of Certification: Valid for 7 years, after candidate must repeat exam process
- Exam: 200 Multiple Choice Questions, 6 hours max. to complete, min. 80% to pass exam

PMI, Certified Associate in Project Management (CAPM): Students will learn to work with the professional standards by project management teams. They will receive higher credibility in conforming with the requirements to be a successful project management team.

- Cost: \$257 Student Bundle includes membership and exam
- Prior Education: At least 23 hours of construction management education
- Prior Work Experience: None
- Renewal of Certification: Valid for 5 years, after candidate must repeat exam process
- Exam: 150 Multiple Choice Questions, 3 hours max. to complete

AGC, CM - BIM Certificate: This certification designates students that understand the concepts related to BIM adoption practices and process incorporated into construction projects. It assists all skill levels to be able to implement BIM into projects.

- Cost: \$575 Exam, \$1200 for 4 courses
- Prior Education: 4 courses each one is 8 hours long, must be taken in a class setting prior to exam
- Prior Work Experience: None
- Renewal of Certification: Valid for 3 years, \$100 Renewal Cost
- Exam: 125 Multiple Choice Questions, 4 hours max. to complete

AGC, CM – Lean Certificate: Students will learn how to incorporate lean practices on their construction project focusing on improvements aimed at minimizing costs and maximizing value, which includes planning, design, construction, activation, operations, maintenance, salvaging, and recycling.

- Cost: \$575 Exam, \$1400 for 7 courses
- Prior Education: 7 courses each one is 5 hours long, must be taken in a class setting prior to exam
- Prior Work Experience: None
- Renewal of Certification: Valid for 3 years, \$100 Renewal Cost
- Exam: 150 Multiple Choice Questions, 4 hours max. to complete

Methodology

The methodology that comprised this paper is primarily quantitative data gathered through fieldwork research by conducting a survey approach. Also information was gathered through research comparing and contrasting the various professional certifications that were mentioned above. The survey was administered through attending specific labs that consisted of students' years 3rd through 5th within the Cal Poly Construction Management Department. With this survey, it provided concise information on the various certifications that are listed above. By presenting it to certain classes, it eliminated the chance for confusion on what these professional certificates represent and they were able to ask questions and discuss them to better understand the objective. By targeting these higher level classes, the response rate for the 51 students was 100% upon opening the survey. The survey consisted of eight questions pertaining to which professional certifications they would like to see implemented and if they were offered would they take advantage of the opportunity. The survey intended to decipher student's opinions of the certifications presented, and if any patterns occurred of students with similar intentions for what sector or

position they would like to hold at work. Through the survey students will be able to voice which certification they would like to see implemented in the near future.

Survey

This survey focused on feasible professional certifications, which industry and construction position interest each student, in addition, if they had the opportunity would they complete the process of obtaining a certification depending on the requirements. Before conducting the survey, through presenting in the class, they were informed of the current certifications in place and read the deliverable of all the possible certifications. Some of the responses were one-sided, such as, believing that professional certifications are important in the industry and would like to obtain more certifications before graduation. The last question asked students if they would like to see any other certifications implemented that are not listed above and a few were: QSP/QSD Qualification, Alternative Dispute Resolution Certificate, and the LEED AP once they receive the LEED Green Associate. From these responses along with the survey results, it is clear that students would like to have the option to acquire more professional certifications whether they be implemented into the curriculum or offered optionally.

Results and Analysis

The information has been collected through a survey that was presented in several higher level lab classes with a student body containing 3rd through 5th years, which includes 51 respondents. The survey was first administered on May 10th, 2018 and was last completed on May 22nd, 2018. The survey consisted of eight questions including multiple choice, matrix/rating scale, and short answer responses. These questions can be referred to in Appendix A. The targeted audience were upper classmen in the Cal Poly CM program because these students have a better understanding of the industry along with which certifications could benefit them in the future. Out of the students that participated in the survey, 80.4% specified which job route they are planning on taking (See Figure 1). That 19.61% that was undecided could be the 3rd years, who still have some time to decide what they would like to specifically do in the construction industry. This data will assist later in deciphering if job routes have an impact if students believe certificates are important and on which certificates students find interest in. For example, field personnel, such as, superintendents focus on field work experience and may not find as much worth in certifications as a project manager that would like to obtain the Certified Associate in Project Management.

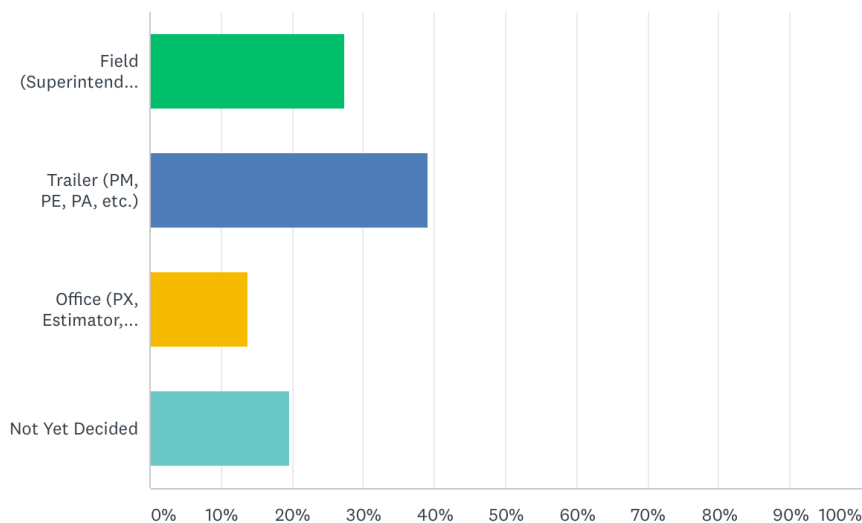


Figure 1: Cal Poly CM student's intended job route.

Professional certifications represented by different organizations have an impact on various sectors of the construction industry. The next question focused on what Cal Poly CM student's primary interest of construction is,

which turned out to be 72.55% commercial (See Figure 2). The remaining were around all the same percentages including residential, heavy civil, specialties, and not decided. By understanding the job path and sector that majority of students would like to begin their career in, it will have an impact on which professional certifications will have a higher chance of being implemented into the curriculum.

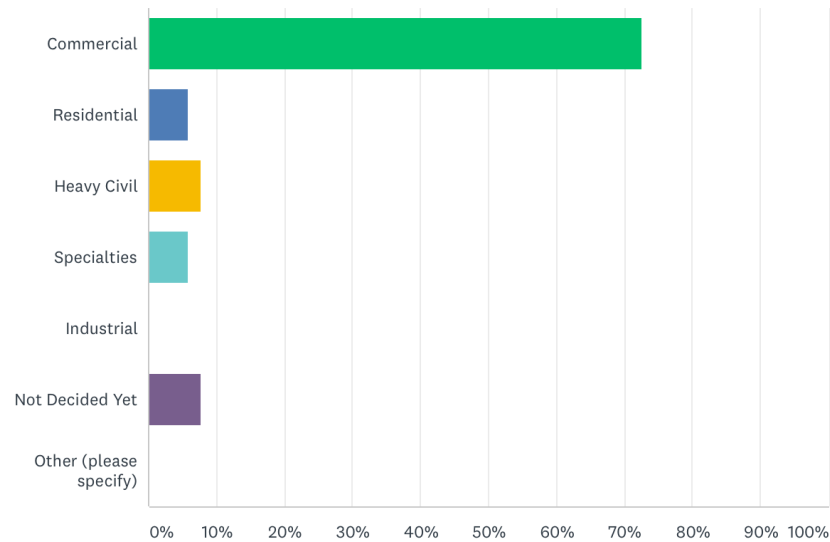


Figure 2: Cal Poly CM student's choice of construction industry.

Since all students strive to take different routes within the construction industry, Cal Poly Construction Management can assist by implementing certifications in different work concentrations and help them be more competition from other recent graduates. When the students were asked whether they believe professional certifications are important in the construction workplace, 94% answered Yes. Based on that same premise, students were asked if more certifications were offered as an option through the department would they complete them and 98.04% answered Yes (See Figure 3). Even though, some students did not believe they are that significant in the workplace, they still opted to complete more certifications, because they understand that it will put them at an advantage over other students. Although, this survey was only taken by a portion of the upperclassmen CM students, the results unanimously favor in implementing professional certifications.

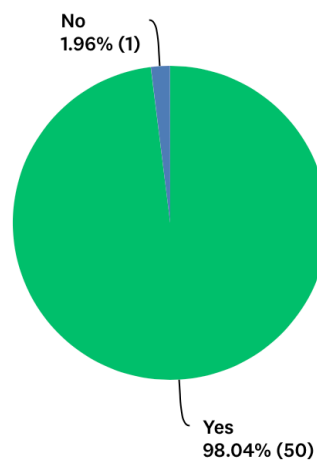


Figure 3: Student response for whether they would complete certifications if offered.

Unfortunately, certifications are not inexpensive, as previously mentioned from the research in the introductory section. Certifications can range from anywhere from \$100 to over \$1,000. During the presentation in the classes, students were reminded that these certificates are not, but Cal Poly is extremely fortunate for having such generous donors in helping the Construction Management program prosper even further. In Appendix A, there are some results of how much student would be willing to pay for certifications after they have been potentially subsidized by Cal Poly. Previously, through the help of Cal Poly's dedicated professors they have successfully subsidized certifications from organizations like OSHA, AIC, and NAHB.

The students received the deliverable emphasizing what each feasible certification entails and were asked to rank each certificate either having exceptional value, good value, neutral, little value, or no value to them. Through weighing the five possible responses for the certifications, the result scores came back rather similar (See Figure 4). There is a clear ranking from 1st to 7th place, first being LEED – Green Associate (GA) and the last being AGC – CM BIM Certificate.

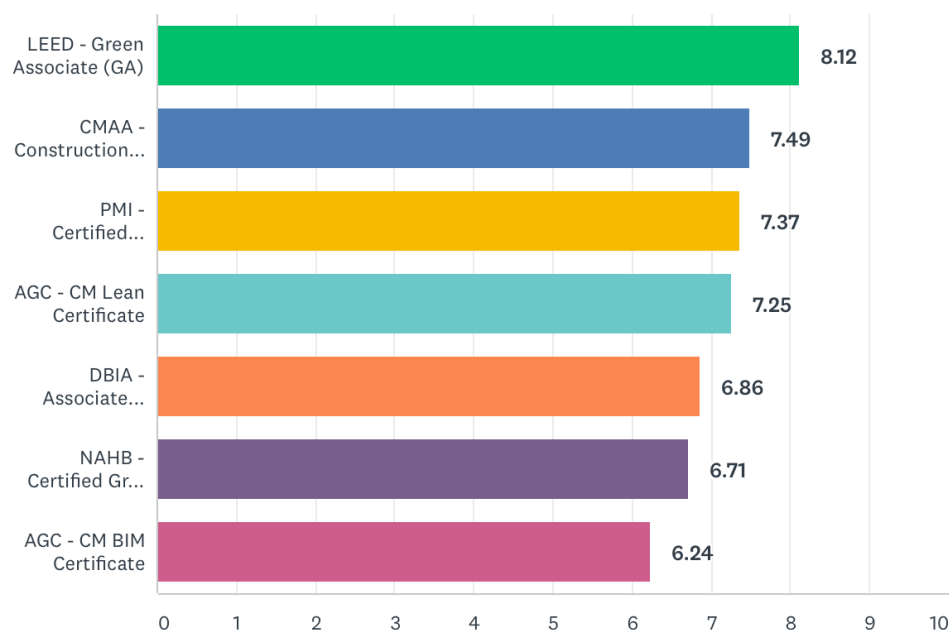


Figure 4: Student ranking of certifications weighted average.

From the seven possible certifications, the Green Associate, in first place, is the easiest to obtain and most versatile, since in recent years many projects are trying to achieve LEED ranking. The certifications, in second and third place, CMAA – Construction Manager in Training and the PMI – Certified Associate in Project Management, are very feasible because of the prior education and work experience required is already completed by majority of the students. In fourth place, the AGC – CM Lean Certificate offers great knowledge for students, but would require in-class preparation for the exam. This could be evidence as to why it scored lower than the previous three. Both fifth and sixth place, may have scored lower because in order to receive the certification one would need to complete everything and then wait upon graduation to receive the actual certificate. The AGC – CM BIM Certificate in last place is the second most expensive and does not offer mastering different BIM software, but rather being able to implement BIM properly into construction projects. Most students involved in BIM find it much more useful in their future endeavors to seek out and become experts in all the modern BIM programs rather than learning implementation that majority of projects already have. The results in Figure 4 are very similar to one another because they are averaged, in Appendix B is another version of these results emphasizing the different rankings per certificate. These results show that through the averaging system, many of the students that chose neutral overpowered the students that were enthusiastic and ranked the certification higher. With these presented results, the

best method to move forward is acknowledge the rankings of these professional certifications and look into ways of implementing them starting from the highest ranked.

Conclusion

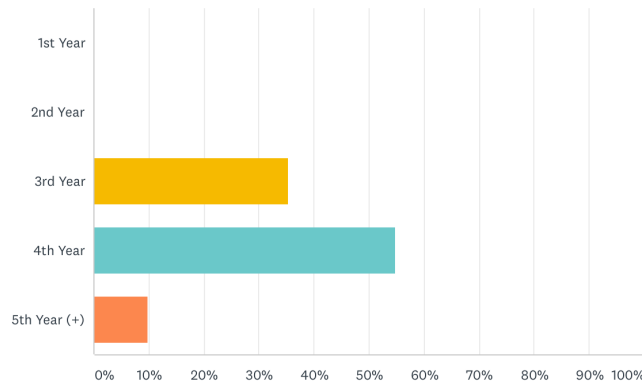
According to the survey conducted, 98% of Cal Poly Construction Management students indicated that if more opportunities of obtaining certifications were offered through the department that they would complete them. Clearly, these students would like to receive this opportunity and may have been limited in the past by the costs or time constraints that these certifications administer. To begin offering these certifications it would seem most reasonable to start with the top three being LEED – Green Associate, CMAA – Construction Manager in Training, and PMI – Certified Associate in Project Management. There is no short process of implementing another course or tech elective and since all of these certifications touch on different topics, the most effective way of getting students to take these certifications is offering them optionally. The first step would be getting in contact with these three organization see if they would be willing to further subsidize the costs for a large group of students and if they would be willing to administer the exam on Cal Poly's campus. Thankfully Cal Poly Construction Management Department has great relations with industry members and organizations, with this direct support these certifications should not be difficult to acquire. The Department could reach out to the industry members because these students are their potential future employees and equipping them early on with professional certifications will benefit everyone. Once all organizations are contacted the next step is to send out emails to the all the construction management students and have a sign-up sheet of who would like these various certifications. From there the department could administer study groups and provide materials in order to prepare for the exams. There would be two exam dates offered per certification one in fall quarter and the other in spring quarter. Another consideration would be examining the certifications that students opted for in the comment section of the survey: QSP/QSD Qualification, Alternative Dispute Resolution Certificate, and the LEED AP once they receive the LEED Green Associate. It would be beneficial to research what requirements these certifications impose and if it would be possible to administer these as well.

There is always room for a student's growth and while Cal Poly Construction Management has a prestigious program there are ways to help students have an upper edge against recent graduates from other institutions. Students want to learn and expand their professional knowledge, one way of doing so is offering certifications. This will better prepare students for post-graduate work and will give them some flexibility of which certification pertains to their path. Entering the work force with certifications will allow students to showcase their specialized knowledge and driven work ethic. These professional certifications will be a small adjustment to the already distinguished program at Cal Poly San Luis Obispo.

Appendix A

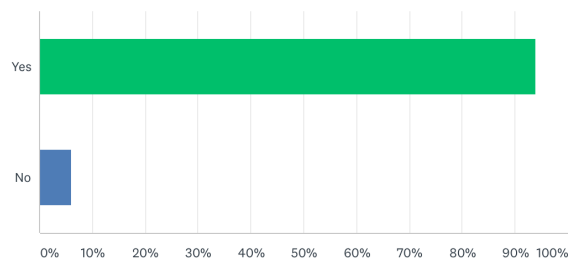
Please mark what grade you are in.

Answered: 51 Skipped: 0



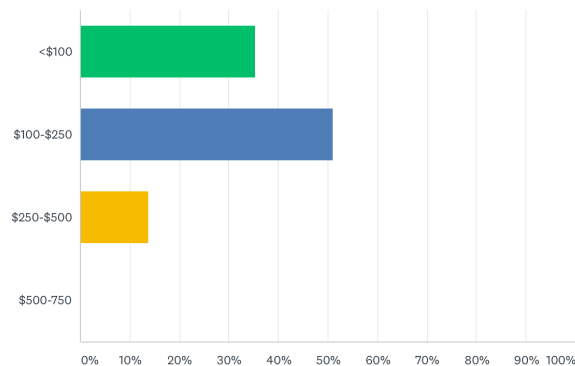
Do you believe professional certifications are important in the construction workplace?

Answered: 50 Skipped: 1



How much would be the most you would be willing to pay for a professional certification? (This could include anywhere from only to a combination of certificate, exam, and/or courses.)

Answered: 51 Skipped: 0



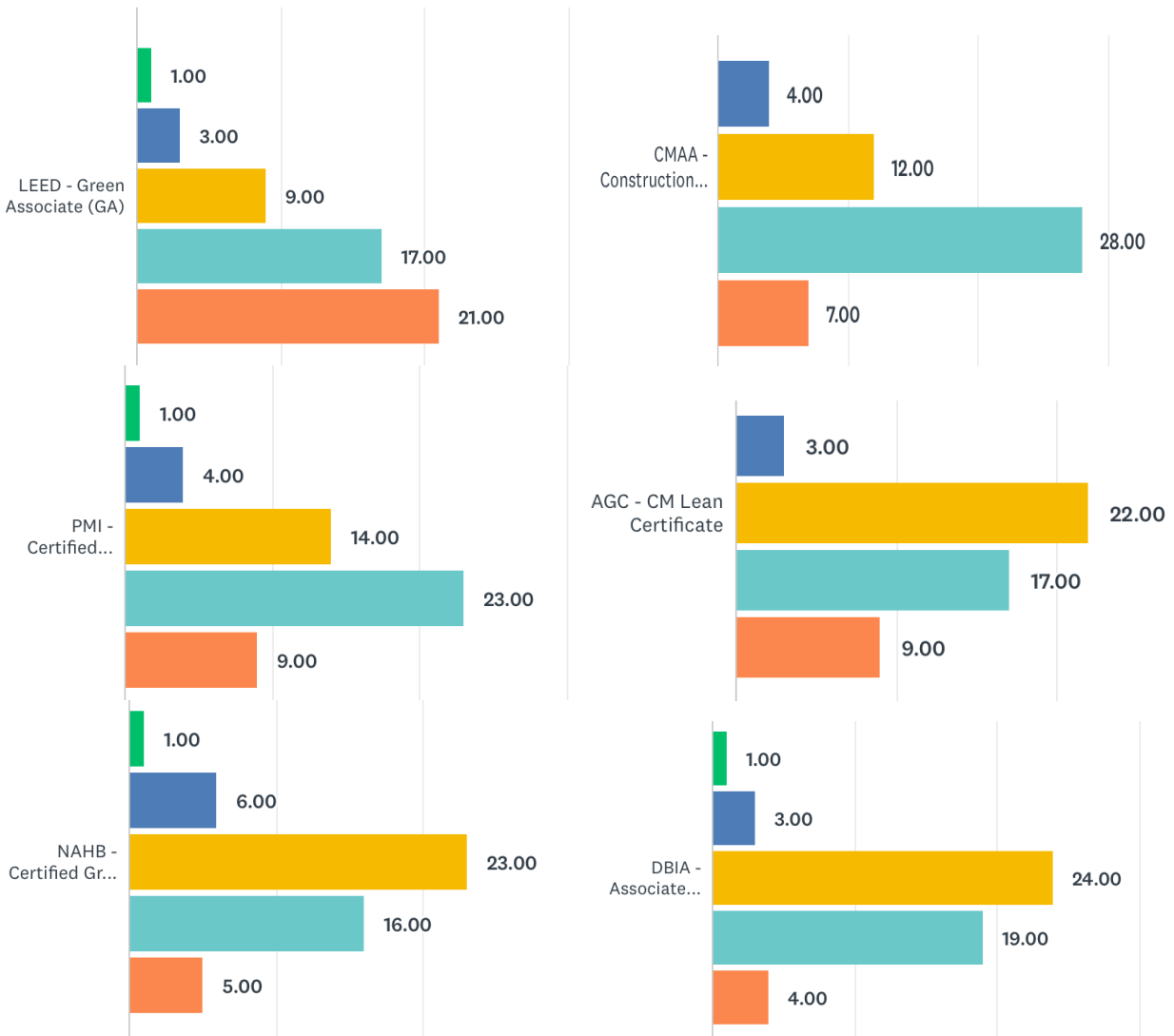
Is there any other certification (not listed above) that you would like to see implemented?

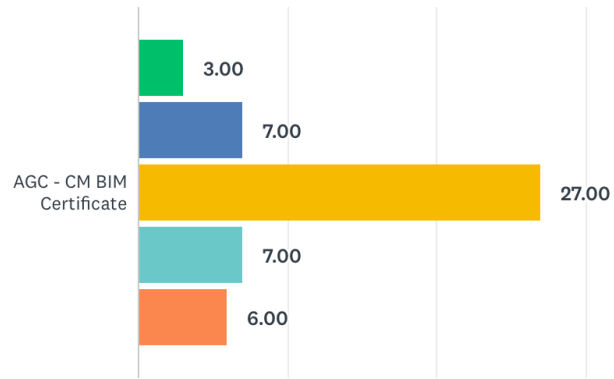
Appendix B

Below is a list of professional certifications that could be obtained by Cal Poly CM students. Which one's would you like to see implemented and find value in taking?

Answered: 51 Skipped: 0

■ No Value
 ■ Little Value
 ■ Neutral
 ■ Good Value
 ■ Exceptional Value





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